

REMARKS

This Amendment under 37 C.F.R. §§ 1.111 and 1.115 is being submitted in response to the outstanding Official Action dated December 23, 1996. In view of the above amendments to the claims and the remarks which follow, reconsideration and allowance of this application is respectfully requested.

Claims 9, 30 and 31 have been amended to more particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, these claims have been amended to address the Examiner's rejections under 37 C.F.R. § 1.75(c) and 35 U.S.C. § 112, second paragraph. In particular, claim 9 has been amended to delete references to the trademarks Sepharose and Fractosil. Claims 30 and 31 have been amended to depend solely from claim 1.

It is believed to be clear that the foregoing claim amendments do not involve the introduction of new matter. For reasons which are submitted below, the claims are believed to be in condition for allowance. The amendments are believed to resolve the concerns raised by the Examiner. Accordingly, reconsideration is respectfully requested.

In the Official Action, claims 30 and 31 were objected to under 37 C.F.R. § 1.75(c) as being in improper form because, as multiple dependent claims, they did not refer to other claims in the alternative only. For this reason, claims 30 and 31 were not further treated on the merits. This rejection is respectfully traversed in view of the above claim amendments for the reasons set forth hereinafter.

Claims 30 and 31 have been amended to depend only from claim 1. By removing the multiple dependencies from claims 30 and 31, this rejection has been rendered moot and favorable consideration and allowance of claims 30 and 31 is therefore respectfully requested.

Next, claim 9 was rejected as being indefinite under 35 U.S.C. § 112, second paragraph, for containing the trademark/trade names Sepharose and Fractosil. This rejection is respectfully traversed in view of the above claim amendment for the reasons set forth hereinafter.

Claim 9 has been amended to remove the terms "Sepharose®" and "Fractosil®". Claim 9 thus no longer refers to trademarks or trade names, and

therefore is no longer indefinite for the reason give by the Examiner. By amending claim 9 in this manner, this rejection under 35 U.S.C. § 112, second paragraph has thus been overcome. Reconsideration by the Examiner is therefore respectfully requested.

Finally, claims 1-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Hyman*. *Hyman* was cited as disclosing a method for the synthesis of oligonucleotides by a sequence of specific steps considered by the Examiner to render the presently claimed method prima facie obvious. This rejection is respectfully traversed for the reasons set forth hereinafter.

The present invention can be distinguished on the basis that nucleotide triphosphates are used, rather than the nucleotide monophosphates disclosed by *Hyman*. While *Hyman* generically discloses the use of nucleotides, there is no enabling disclosure of how a 5'-triphosphate may be employed. There is absolutely no disclosure of an enzyme that is capable of forming a phosphodiester bond with a 5'-triphosphate. In the *Hyman* process, the enzyme used for making the phosphodiester bond is RNA ligase, which only catalyzes the coupling of 5'-monophosphates to 3'-hydroxyls and is inactive towards 5'-triphosphates with respect to forming phosphodiester bonds.

The diphosphates referred to by *Hyman* are actually bis-monophosphates, having two monophosphate groups at the 3'- and 5'- positions. The 3'-monophosphate functions as a blocking group. Triphosphates (ATP) are merely used as an energy source, while at the same time generating AMP for use in the coupling reaction. The enzyme actually couples a dimer of AMP and another nucleotide bis-monophosphate (ATPNP) to physically couple the other nucleotide bis-monophosphate to the growing nucleotide chain. Triphosphates simply cannot be added to nucleotide chains under the conditions disclosed by *Hyman*.

Hyman therefore fails to teach or suggest the nucleotide triphosphate-based method of the present invention. Claims 1-31 accordingly patentably distinguish over *Hyman* under 35 U.S.C. § 103, and reconsideration and withdrawal of this rejection is therefore respectfully requested.

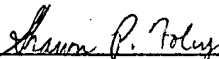
In view of the above claim amendments and the foregoing remarks, it is believed that this application is now in condition for allowance. Reconsideration is

respectfully requested. However, if the Examiner still believes that there are any objections to this application, he is requested to telephone the undersigned at (908) 654-5000.

Finally, if there are any additional charges in connection with this response, the Examiner is authorized to charge Applicants' Deposit Account No. 12-1095 therefor.

Respectfully submitted,

LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK



SHAWN P. FOLEY
Reg. No. 33,071

600 South Avenue West
Westfield, New Jersey 07090
Telephone: (908) 654-5000
Facsimile: (908) 654-7866

FASS\DOCS\3.0\101262.DOC